CLAIMS:

1. A method for correcting redeye in a digital image, said image having at least one redeye defect pair, said method comprising the steps of:

measuring a defect pair separation;

adjusting the size of said defects of said defect pair responsive to said defect pair separation to provide adjusted defects; and

changing the color of said adjusted defects.

2. The method of Claim 1 wherein said adjusting further comprises reducing the size of at least one of said defects of said defect pair.

3. The method of Claim 2 wherein said reducing further comprises calculating a size limit using said defect pair separation and trimming pixels beyond said size limit from said defects.

4. The method of Claim 1 further comprising the steps of:

detecting the locations of a pair of seed defects prior to said measuring; and

growing said seed defects into grown defects prior to said adjusting; and

wherein said adjusting further comprises reducing the size of said grown defects.

5. The method of Claim 4 wherein said measuring is prior to said growing.

6. The method of Claim 4 wherein said seed defects each have a single pixel prior to said growing.

7. The method of Claim 1 further comprising determining a size limit based on said defect pair separation and wherein said adjusting is responsive to said size limit.

8. The method of Claim 7 wherein said determining further comprises ascertaining an age classification of each said defect pair.

9. The method of Claim 8 wherein said determining further comprises ascertaining a head rotation of each said defect pair.

10. The method of Claim 9 wherein said size limit is based upon said age classification and head rotation of each said defect pair and upon an imaging system blur associated with said image.

11. The method of Claim 7 wherein said determining further comprises ascertaining a head rotation of each said defect pair.

12. The method of Claim 7 wherein said size limit is based upon an imaging system blur associated with said image.

13. The method of Claim 1 further comprising the steps of:
determining a spatial operator in accordance with said defect pair separation; and
using said spatial operator to blend the image in the vicinity of said adjusted defects.

14. The method of Claim 1 wherein said image has a plurality of pixels, each said pixel having values of three color components, said color components including a least red component and two additional components, said least red component having a lesser red spectral sensitivity than said additional components and wherein said changing further comprises setting said values of

said color components of each said pixel of said adjusted defects to the value of the respective said least red component.

15. The method of Claim 14 further comprising correcting said blue component prior to said setting.

16. The method of Claim 14 further comprising the steps of:
determining a spatial operator in accordance with said defect pair separation; and
using said spatial operator to blend said two additional components of the image in the vicinity of said adjusted defects.

17. The method of Claim 1 wherein said image has a plurality of pixels, each said pixel having values of red, blue, and green color components, and wherein said changing further comprises setting said values of said color components of each said pixel of said adjusted defects to the value of the respective said blue component.

18. The method of Claim 1 further comprising the steps of:
determining an average flesh color associated with said adjusted defects;
determining a target pupil value from said average flesh color; and
using the target pupil value to modify the color of said adjusted defects.

19. The method of Claim 18 wherein said average flesh color is representative of an empirically determined relationship between flesh color and pupil color in human images without redeye defect.

20. A method for correcting redeye in a digital image, said method comprising the steps of:

detecting a pair of seed defects in said image;

growing each of said seed defects to provide a pair of grown

defects;

measuring the separation of the members of one of said pair of seed

5   defects and said pair of grown defects to provide a defect pair separation;

adjusting the size of said grown defects responsive to said defect

pair separation to provide adjusted defects; and

changing the color of said adjusted defects to reduce apparent

redeye.

10

21. The method of Claim 20 wherein said adjusting further

comprises reducing the size of said grown defects.

22. The method of Claim 20 wherein said seed defects each have a

15   single pixel.

23. The method of Claim 20 wherein said reducing further

comprises calculating a size limit using said defect pair separation and trimming

pixels beyond said size limit from respective said defects.

20

24. The method of Claim 23 wherein said seed pixels each have a

single pixel and said reducing further comprises trimming pixels of each said

grown defect disposed farther than said size limit from a pixel location defined by

the respective said seed defect.

25

25. The method of Claim 23 wherein said seed pixels each have

multiple contiguous pixels and said reducing further comprises trimming pixels of

each said grown defect disposed farther than said size limit from a centroid

defined by the respective said seed defect.

30

26. The method of Claim 20 wherein said growing further comprises:

generating a list of pixels of each said seed defect to provide list pixels;

5   determining pixels neighboring said list pixels to provide neighboring pixels;

calculating color value ratios of each of said neighboring pixels; and

adding to said list one of said neighboring pixels having the color

10   value ratio most distant from said predetermined limit, when one or more of said neighboring pixels has a color value ratio greater than a predetermined limit.

27. The method of Claim 20 further comprising determining a eye separation correction factor and wherein said adjusting is responsive to said defect

15   pair separation and said separation correction factor.

28. The method of Claim 27 wherein said determining further comprises ascertaining at least one of an age classification and a head rotation of each said defect pair.

20

29. The method of Claim 21 wherein said image has a plurality of pixels, each said pixel having values of three color components, said color components including a least red component and two additional components, said least red component having a lesser red spectral sensitivity than said additional

25   components and wherein said changing further comprises setting said values of said color components of each said pixel of said adjusted defects to the value of the respective said least red component.

30. The method of Claim 29 further comprising correcting said

30   least red component prior to said setting.

31. The method of Claim 29 further comprising the steps of:

determining a spatial operator in accordance with said defect pair separation; and

using said spatial operator to blend said two additional components of the image in the vicinity of said adjusted defects.

32. The method of Claim 21 wherein said image has a plurality of pixels, each said pixel having values of red, blue, and green color components, and wherein said changing further comprises setting said values of said color components of each said pixel of said adjusted defects to the value of the respective said blue component.

33. The method of Claim 21 further comprising the steps of:

determining an average flesh color associated with said adjusted defects;

determining a target pupil value from said average flesh color; and

using the target pupil value to modify the color of said adjusted defects.

34. A computer program product for correcting redeye in a digital image, the computer program product comprising computer readable storage medium having a computer program stored thereon for performing the steps of:

measuring a defect pair separation;

adjusting the size of said defects responsive to said defect pair separation to provide adjusted defects; and

changing the color of said adjusted defects.

35. A system for correcting redeye in a digital image, said image having at least one redeye defect pair, said system comprising:

a distance measurer measuring a defect pair separation;

a defect grower receiving said defect pair separation and adjusting the size of said defects responsive to said defect pair separation to provide adjusted defects; and

a color modifier changing the color of said adjusted defects.

5

36. The system of Claim 35 further comprising a size checker measuring the size of said grown defects, comparing the respective size to a grown size limit, and shifting the respective said defect seed when the respective size is outside said grown size limit.

10

37. The system of Claim 36 further comprising a size limiter adjusting said grown defect in two stages, said adjusting being different in said two stages.

15

38. The system of Claim 37 wherein said adjusting in one of said stages is in accordance with a parameter equal to a predetermined maximum diameter of a human pupil divided by a predetermined distance between human pupils and said adjusting in the other of said stages is in accordance with a parameter equal to a predetermined maximum radius of a human redeye defect

20   divided by said predetermined distance between human pupils.

39. The system of Claim 35 further comprising a defect blender determining a spatial operator in accordance with said defect pair separation; and using said spatial operator to blend said two additional components of the image

25   in the vicinity of said adjusted defects.

40. A method for correcting redeye in a digital image having a plurality of pixels, each said pixel having values of three color components, said color components including a least red component and two additional

30   components, said least red component having a lesser red spectral sensitivity than said additional components, said method comprising the steps of:

locating a redeye defect in the image; and

setting said values of said color components of each said pixel of said adjusted defects to the value of the respective said least red component.

5   41. The method of Claim 40 further comprising correcting said least red component prior to said setting.

42. The method of Claim 40 wherein the image has a pair of redeye defects and said method further comprises the steps of:

10   measuring a defect pair separation;

determining a spatial operator in accordance with said defect pair separation; and

using said spatial operator to blend said two additional components of the image in the vicinity of said defects.

15

43. The method of Claim 42 wherein said pixels each have red, green, and blue color components and said changing further comprises setting the respective said values of said color components of each said pixel of said defects to the value of the respective said blue component.

20

44. A method of correcting redeye defects in a digital image of a human subject, the method comprising:

locating redeye defects of the human subject;

determining an average flesh color associated with the human

25   subject;

calculating a target pupil value from the average flesh color; and

using the target pupil value to modify color of the redeye defects.